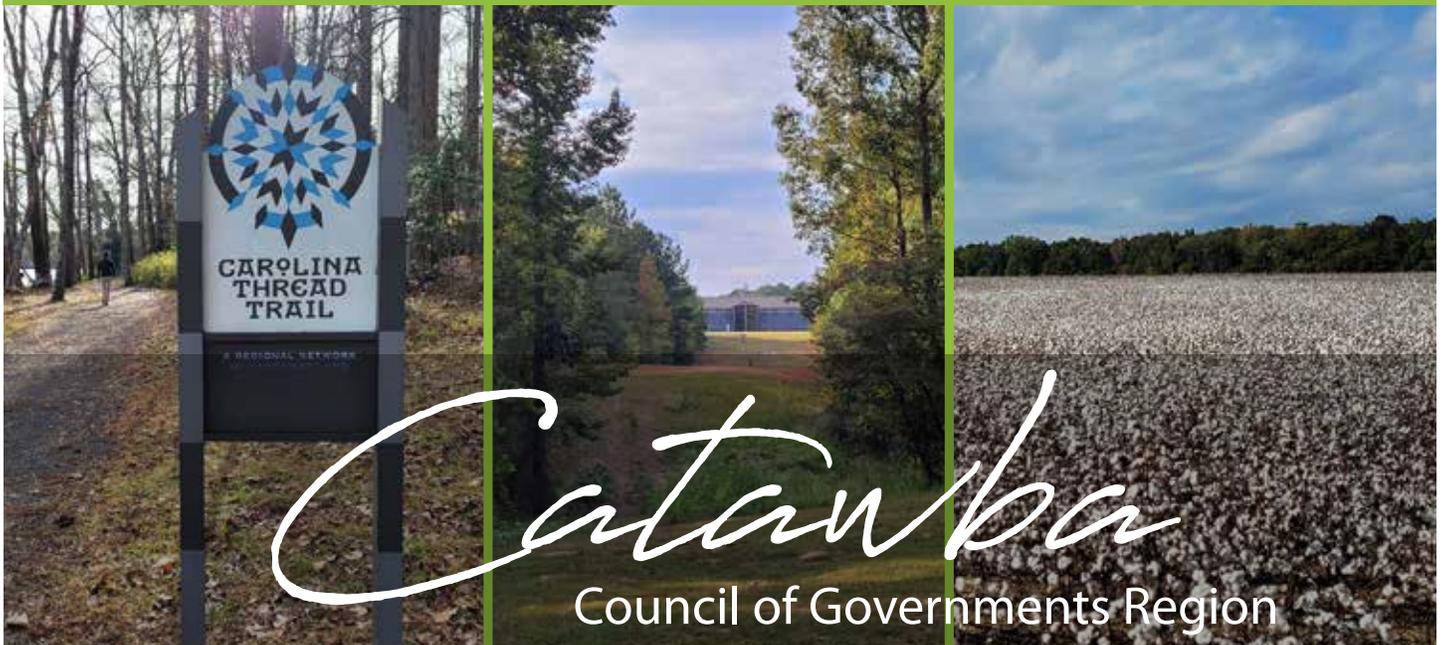


A Green Infrastructure Plan

to Restore, Connect, and Protect
South Carolina's Habitats



Planning for Green Infrastructure involves protecting and connecting the natural and cultural assets of the Catawba region.



March 2023

Prepared for the state of South Carolina by the Green Infrastructure Center
Funded by the South Carolina Forestry Commission and the USDA Forest Service, Southern Region



Executive Summary

The Catawba COG region contains diverse natural and cultural resources, from scenic rivers and battlefields to the state's only federally recognized Indian Reservation. With a major interstate highway, I-77, and proximity to the growing cities of Charlotte and Columbia, the region is experiencing significant development pressure. While economic prosperity is vital to the communities in this region, it is important that growth occur in patterns that conserve the region's natural resources and habitats. Continuation of local efforts to conserve land, create regional partnerships, and establish both ordinances and planning guidance for growth that protect green infrastructure will ensure the continued high quality of life in the Catawba region for future generations.

The Catawba COG region is in the north central part of the state, between Charlotte, NC, and Columbia, SC, and is connected by the Broad River on the western edges of York and Chester Counties, spanned by Francis Marion and Sumter National Forests on the south end of

Union County, and linked by the Catawba River flowing between York/Chester County and Lancaster County. It encompasses York, Union, Chester, and Lancaster Counties. The landscape includes forests, rivers, wetlands, and agricultural fields. The Charlotte economy, low cost of living, and high quality of life attract new residents to York and Chester counties where urban growth expands out from the Charlotte metro area. Historic battlefields, opportunities to see communities of Rocky Shoals Spider Lilies or Carolina Pool Sprites, and regional trails, such as the Catawba River Greenway, contribute to the region's unique identity. The region is also the ancestral home of the Cheraw, Waxhaw, Catawba, and Sugeree Native people*. The Catawba Nation, the only federally recognized tribe in South Carolina, is located in York County. Approximately 10% of land in the Catawba COG region is protected in several state parks, national forest land, wildlife management areas, preserves, and other open spaces.



The Catawba region includes forests, rivers, wetlands, and agricultural fields. Approximately 10% of land in the Catawba COG region is protected in several state parks, national forest land, wildlife management areas, preserves, and other open spaces.

Green Infrastructure Planning Process

This Green Infrastructure (GI) Plan comprises a set of maps and strategies for conserving and restoring a connected landscape in the state. GIC led the Catawba COG and local stakeholders through GIC's Six-Step Green Infrastructure Planning Process with a series of four workshops from 2021-22. This process involved mapping habitat cores and corridors, as well as existing natural and cultural assets, followed by risk analysis to inform strategies for action. With these data, local stakeholders determined priority areas for conservation in the region, as well as strategies to ensure a connected landscape into the future. GIC followed those ground-level workshops with planners and stakeholders at the COG, county, and city level with state agency engagement. The resulting statewide plan is informed by, and includes, the COG's regional priorities.

This COG chapter will appear as a separate document, distinct from the full report, since it is one of ten COG chapters that have been included in the statewide assessment. The full report can be found here: <https://scgiplan-gicinc.hub.arcgis.com/> or at www.gicinc.org or <https://www.scfc.gov/management/urban-forestry/>

The statewide scale of this project did not allow GIC to drill down to the level of county and city green infrastructure plans, but did establish important priorities for each region.

1. In the first workshop, GIC presented an overview of the project and shared a map of the region's ranked habitat cores. Feedback on the accuracy of the map and areas of development were noted and incorporated.
2. In the second workshop, GIC presented themed overlay maps that showed the region's agricultural soils, water resources, recreation, and cultural assets and asked workshop attendees to add their local input on additional assets, such as regional greenways. The final Catawba asset maps and dataset includes new data recommended by participants.

Catawba FAST FACTS

- 1,505,920 acres**– total COG area (2,353 mi²)
- 836,480 acres**– of habitat cores (1,307 mi²)
- 56%** of COG land area is habitat cores
- 127,360 acres**– of protected cores (199 mi²)
- 15%** of habitat cores are protected
- 143,360 acres**– area of protected land (cores and other) (224 mi²)
- 10%** of total area are protected land
- 84,480 acres**– area of public parkland (132 mi²)
- 6%** of total land is public parkland
- 492,160 acres**– area of habitat cores with known cultural/archaeological resources (769 mi²)
- 250,240 acres**– area of habitat cores with highest value ranking (top 5th) (391 mi²)
- 300,160 acres**– area of habitat cores that intersect a groundwater protection zone (469 mi²)
- 138,240 acres**– area of prime agricultural soils on open land (216 mi²)
- 1,280 acres** of wetlands (2 mi²)
- 906 mi of 1,265 mi (72%)**– miles of streams that flow within a habitat core
- 303 of 726 (42%)**– of habitat cores support cultural or recreational assets
- 25 of 726 (3%)**– habitat cores that support known rare, threatened, or endangered species



Catawba COG

3. In the third workshop, GIC presented draft maps of risks to habitat cores, including development, utility-scale solar development, and impaired waters. Stakeholder feedback about these risks was used to update and finalize the risk maps.

4. In the fourth and final workshop, GIC shared a strategy map that showed ranked habitat cores, protected lands, and regional corridors. Stakeholders then considered priority habitats and risks to those assets and recommended strategies to reduce or prevent impacts to high-value resources.

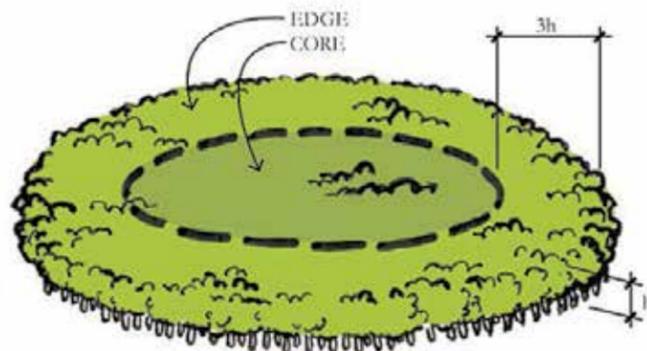
Habitat Cores

Habitat cores are intact areas of the landscape that provide adequate habitat to support native species and were modeled using source data from the 2019 National Land Cover Dataset. Habitat cores are forests, forested wetlands, and marshes at least 100 acres or more in size and are ranked using additional attributes such as water richness, topography, and the presence of rare, endangered, or threatened species. This size is large enough to provide adequate foraging and nesting habitat for interior forest dwelling birds and to support a range of other wildlife species.

Habitat cores encompass 56% of Catawba COG land area.

For more on how habitat cores are created, see the Methods and Maps section (page 7) and the Technical Appendix of the full report.

Ranking cores for the values they provide allows land-use planners, agency officials, and site managers to prioritize those specific habitat cores that best meet management goals and objectives, while providing the highest value for species.

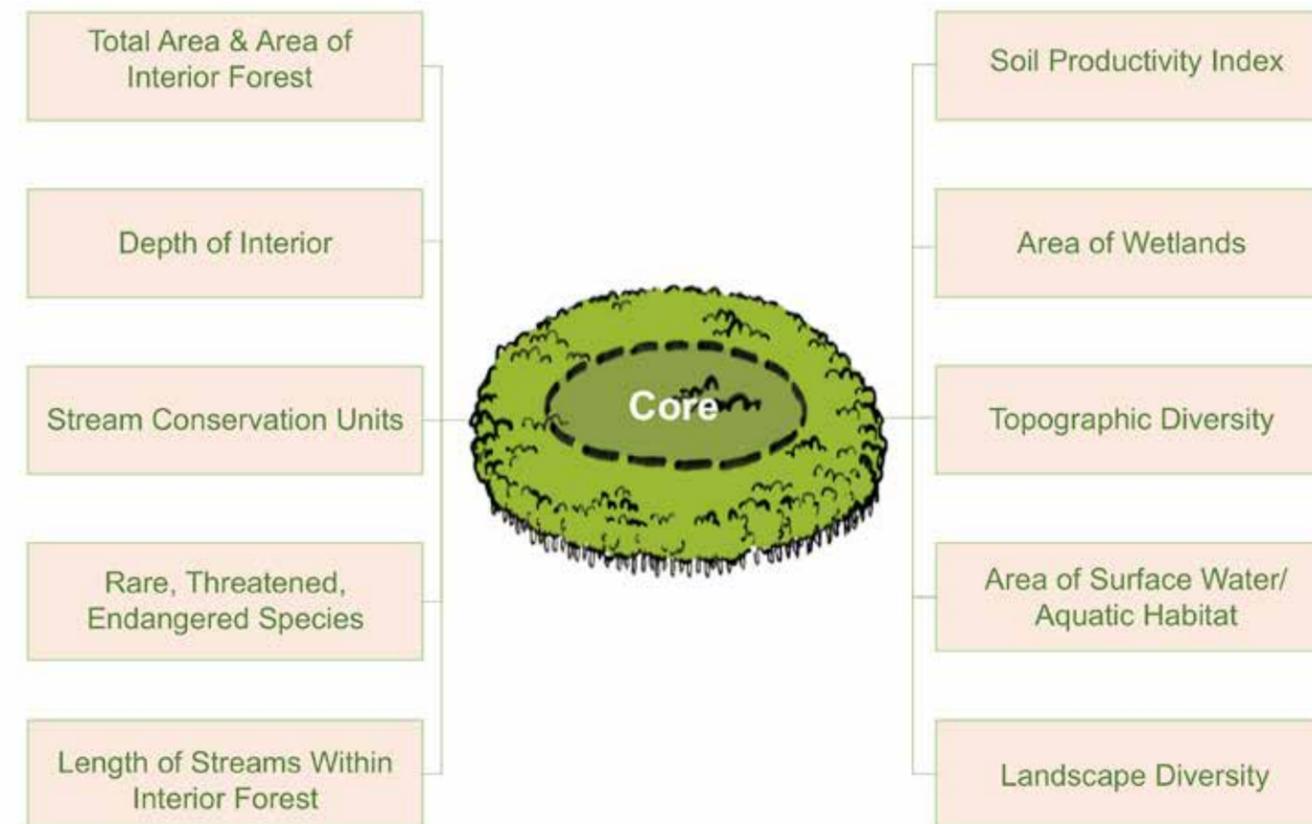


Habitat cores consist of an area of intact interior wildlife habitat of 100 acres or more and an edge area that serves as a buffer absorbing impacts from outside the core.

6-Step Green Infrastructure Planning Process

- 1. Set Your Goals** What does your community value?
- 2. Review Data** What do we know or need to know, to map identified values? Combine the state modeled data with local data.
- 3. Map Your Community's Ecological and Cultural Assets** Based on the goals established in Step 1 and data from Step 2.
- 4. Assess Risk** What assets are most at risk and what could be lost, if no action was taken?
- 5. Rank Assets and Determine Opportunities** Based on those assets and risks you have identified, which ones should be restored or improved?
- 6. Implement Opportunities** Include natural asset maps in both daily and long-range planning (park planning, comp plans, zoning, tourism and economic development, seeking easements etc.)

Habitat cores are ranked based on these ecological metrics.

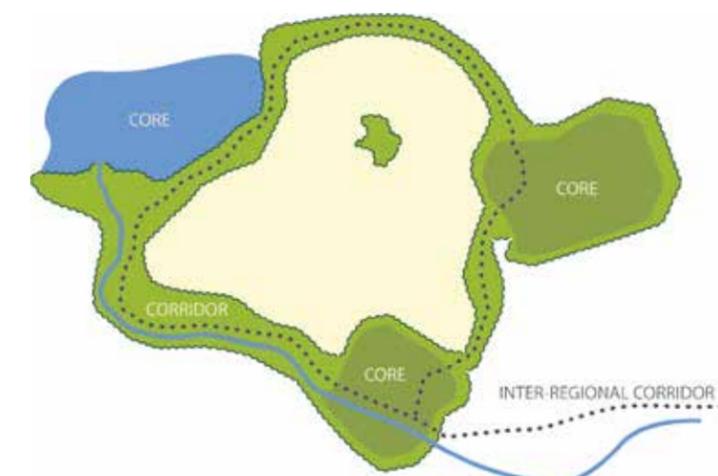


GIC modeled and mapped ranked habitat cores across both the region and state, based on ecological metrics, *see chart above*.

For more on corridor modeling see the Introduction section (pages 10 and 11) and the Technical Appendix of the full report.

Corridors

Wildlife moves between habitat cores along corridors that support biodiversity by allowing species to move across the landscape and repopulate areas following such disturbances as hurricanes or fires. Restoration or preservation of corridors may also present opportunities to incorporate trails for human recreation. In addition to regional corridors, GIC modeled corridors that are of statewide importance. A graphic representation of this connectivity is displayed on the maps as state and local corridor lines. As the region continues to grow, every effort should be made to continue to maintain these corridors for a more connected and resilient landscape.



Green Infrastructure planning is about connecting the landscape. Corridors provide connections between core habitats. A well-connected landscape is more resilient.



Catawba COG

Assets

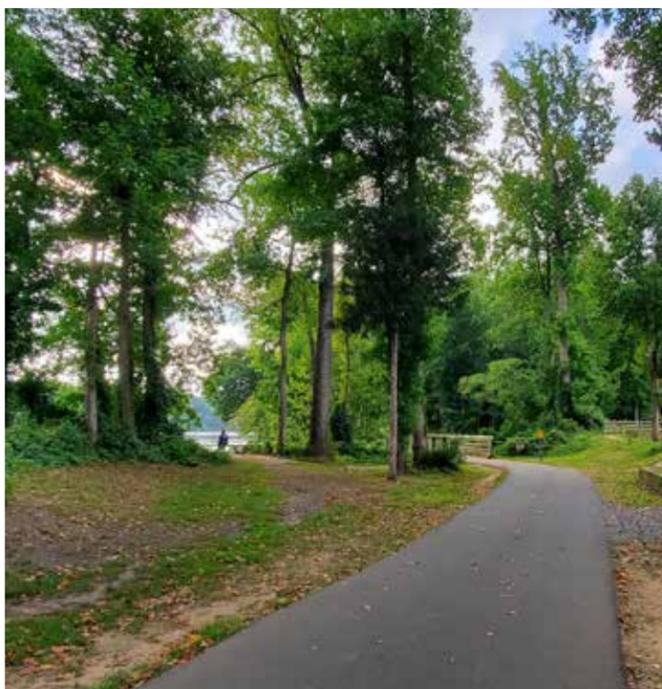
Natural Assets are the environmental elements that provide healthy surroundings, recreational opportunities, and clean water and food for both people and wildlife. These natural assets include forests, waterways, wetlands, bays, agricultural soils, and other natural resources. Cultural Assets are the landscape elements or uses that people value, such as parks, boat landings, trails, historic or archaeological sites, or scenic vistas and roads that add to the beauty of the area. Natural assets support cultural assets by providing scenic backdrops to historic sites, buffering them from storms and providing settings in which to enjoy them, such as the trails through historic sites that engage visitors in history while they enjoy the natural surroundings. GIC mapped these assets using existing state and national datasets, as well as data from stakeholders. The asset maps include water, agriculture, recreation, and cultural assets. Locating these assets is the first step in protecting them and allows decision-makers and planners to make more informed decisions about growth and conservation.

Risks

Mapping important habitats, agricultural soils, and cultural sites is only a first step towards planning to conserve important assets into the future. Mapping risks, in order to understand which assets are most vulnerable is the next step. GIC analyzed the following risks across the state: sea level rise, storm surge, impaired waters, development, and solar development. These risk maps can be used to determine most critical regional risks and priority areas for conservation. Impaired waters maps can be used to determine areas to target for riparian plantings. Development and solar development maps can guide conservation efforts, as well as planning policy. Tools to mitigate risk can also include establishing solar ordinances, or drawing urban growth boundaries to avoid high-value habitat cores.

Catawba Risks

-  **24 of 726 (3%)** habitat cores with **impaired streams**
-  **301 of 726 (41%)** habitat cores at risk of **development**
-  **354 of 726 (49%)** habitat cores at risk of **solar development**
-  **453 of 726 (62%)** habitat cores at **cumulative risk**



The 2.5 mile Riverwalk is part of the City of Rock Hill's Trail and Greenway System.

Regional Observations

The Catawba region's highest quality habitat cores include protected land in Francis Marion and Sumter National Forests. Additional high-quality cores are found along the Catawba River, Broad River, Pacolet River, and Enoree River. The larger wildlife corridors in the region also follow these river corridors and connectivity can be ensured by maintaining buffers and seeking protection along these rivers. The smaller regional corridors rely on the matrix of open agricultural fields to connect areas of habitat cores. Prime agricultural soils in the region are found mostly in the rapidly developing York, Chester, and Lancaster counties, so it is critical to protect these soils for regional food security.

The region supports cultural assets such as historic battlefields, the Catawba Cultural Center located on the Catawba Indian Reservation, and the world's largest population of Rocky Shoals Spider Lilies. There are abundant recreation opportunities such as hiking in a state park, paddling a scenic river, or biking a section of the Carolina Thread Trail. The number of assets highlighted in the maps is the result of participation by stakeholders, so the counties that participated in the process are likely to see more of their assets represented on the maps.

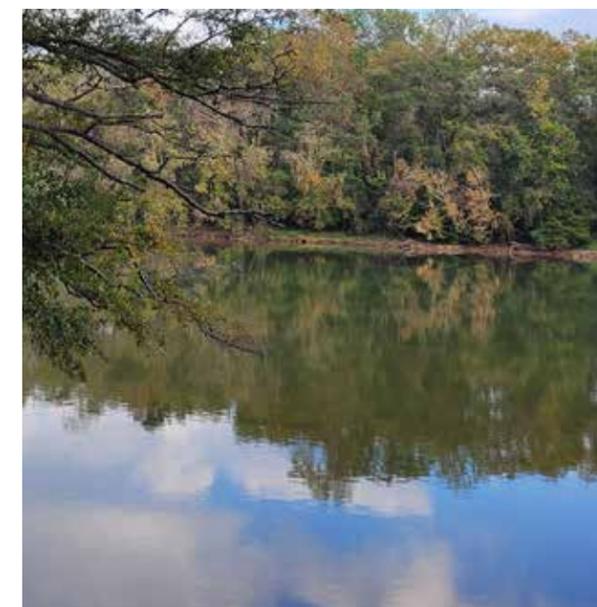
Protected land makes up 10% of the total area in the Catawba COG, below the statewide rate of 14%. The Governor has adopted the 30 by 30 goal to preserve 30% of the state's lands by 2030. Achieving this goal in the Catawba region will require tripling the acreage of protected land, so local municipalities should continue work with the Katawba Land Trust, Nation Ford Land Trust, and other organizations to protect high value habitat in the region. Public park land in the region is 6% of the total area, just above the 5% statewide rate. As the population increases in the region, more high-quality public park space will be needed and habitat cores should be a key consideration for where to locate future parkland.

The greatest risk for the region is urban development, especially suburban sprawl-patterned growth. Urban development risks are greatest in York and Lancaster Counties as Charlotte continues to grow and along the I-77 corridor in North Carolina. Additional development is also likely around the cities of Union and Chester. Growth of utility scale solar development is also likely to place more pressure on agricultural lands and habitat cores. Planning for smart, compact growth will be critical to maintain habitat connectivity, food production capability, and quality of life in the region.

Regional Stakeholders

Participants in the Catawba stakeholder workshops included representatives from:

- Catawba Council of Governments
- York County
- Lancaster County
- Union County
- Chester County
- City of Rock Hill
- City of Lancaster
- Town of Fort Mill
- Town of Clover
- Carolina Thread Trail
- Katawba Valley Land Trust
- Nation Ford Land Trust
- Catawba Indian Nation
- SC Forestry Commission
- SC Department of Health and Environmental Control
- SC Department of Transportation

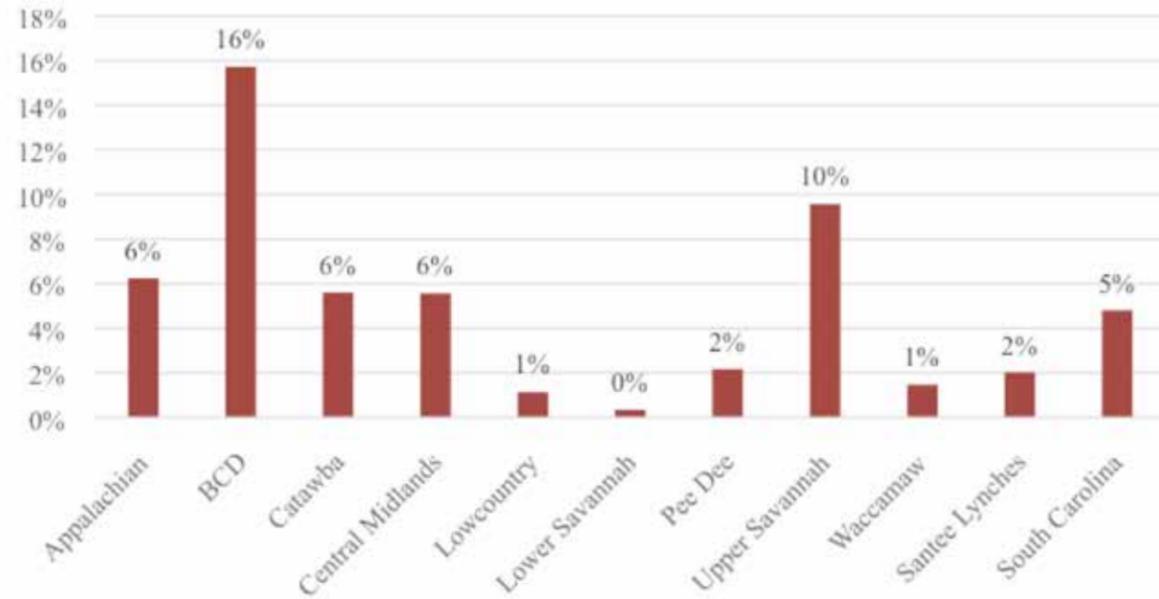


The larger wildlife corridors in the region follow the Catawba, Broad, Pacolet, and Enoree Rivers. Connectivity can be ensured by maintaining buffers and protecting these rivers.



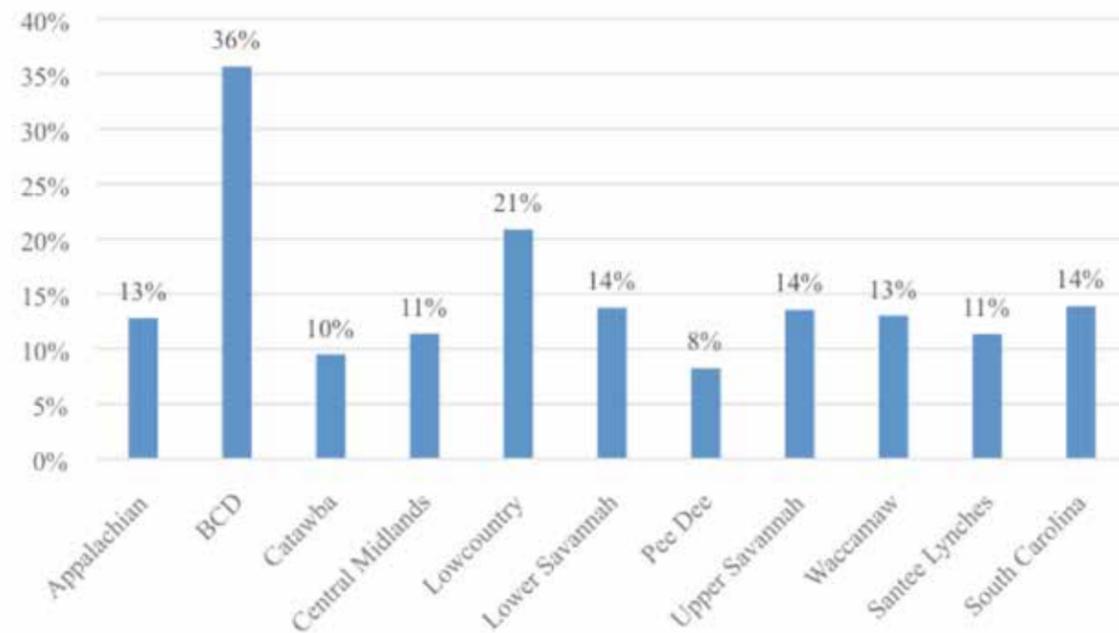
Catawba COG

Percentage of Total Area that is Public Park Land



The percentage of public parkland in the Catawba region is 6%, just above the 5% statewide rate.

Percentage of Total Area that is Protected Land



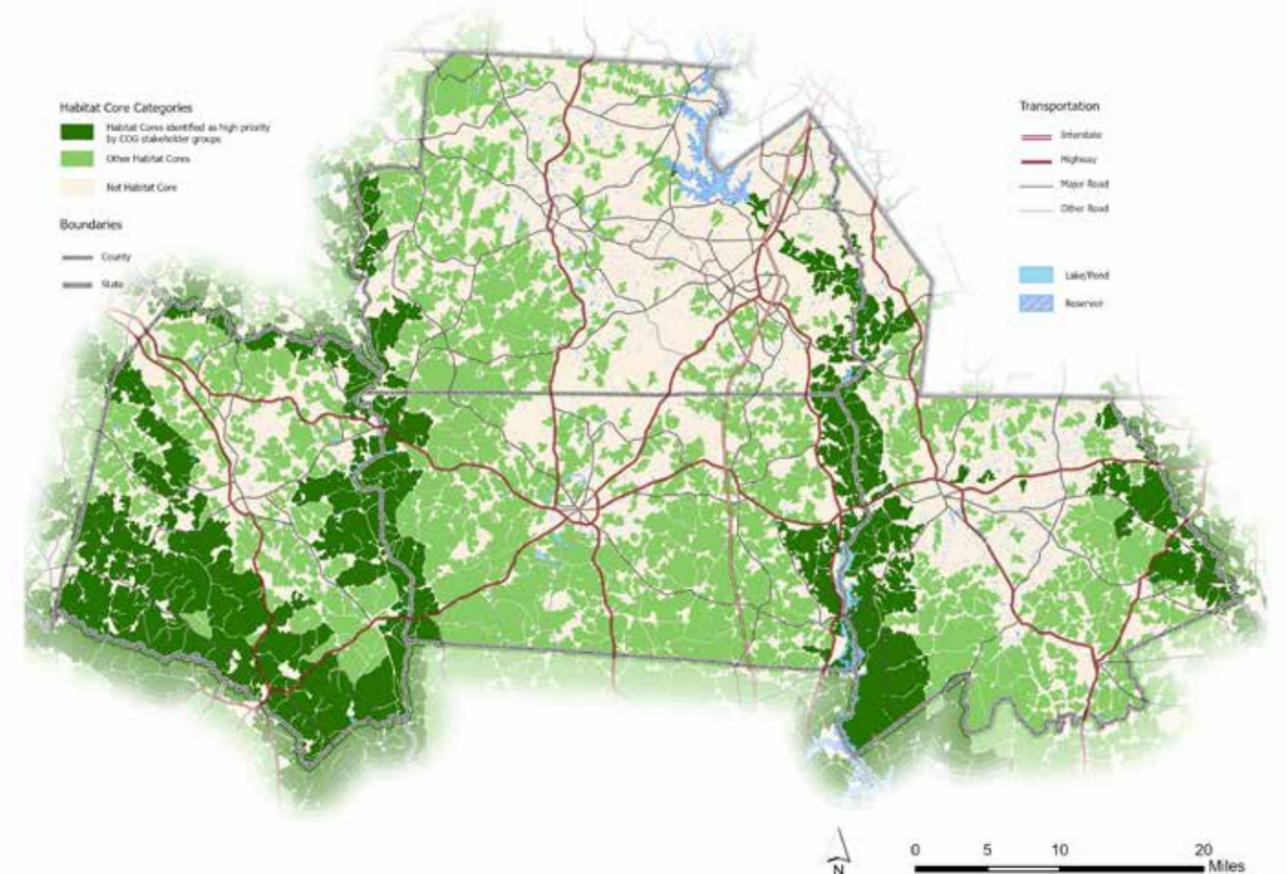
The percentage of protected land in the Catawba region is 10%, below the 14% statewide rate.

Catawba Priority Areas

Catawba stakeholders identified several areas in the region that are priorities for protection and restoration.

- Protect and restore the Catawba River Corridor.
- Protect the area along the Catawba River, south of Doby Bridge Park, which is at high risk of development.
- Protect the open agricultural land west of Rock Hill to support regional connectivity.
- Protect and restore the Manchester Creek corridor which connects downtown Rock Hill to the Catawba River. (Note that the scale of this plan and its focus on larger habitat cores are not conducive to displaying this corridor on the map.)
- Protect and restore Gills Creek and Twelve Mile Creek in Lancaster County.
- Protect and restore the Broad River Corridor along with the lower Pacolet, Tyger, and Enoree rivers.
- Protect and restore the riparian corridor of Fairforest Creek in Union County.

Catawba COG Priority Areas Map



This map illustrates the habitat cores corresponding to the COG identified priority areas for protection and restoration.



Catawba COG

Catawba Strategies

Strategy 1: York County Forever to continue to protect land in the region (since 1998).

York County Forever, funded through property taxes, protects land in York County through conservation easements, PDR, and land acquisition. As of 2021, more than 11,000 acres of York County natural and cultural resources have been protected. The program should utilize the habitat cores and risk data to target additional lands to protect based upon the core's habitat quality, connectivity provided.

Strategy 2: Implement a Green Space Sales Tax.

The York County Forever Program raises revenue from property taxes to protect land. Union, Chester, and Lancaster counties should also consider putting a Green Space Sales Tax on their ballots to raise funds for land conservation. Funds can support collaborative land conservation across county boundaries.

Strategy 3: Create and strengthen solar ordinances.

Large scale solar development is likely to increase in the region and counties must plan for this growth. A solar ordinance is needed in Union County, and ordinances need to be strengthened in York, Chester, and Lancaster

Counties. The South Carolina Energy Office has resources for creating or updating solar ordinances and offers model solar ordinances.

Strategy 4: Include habitat cores and corridors in the permit review process.

Counties should overlay habitat cores and corridors data with proposed development projects to analyze the project's impact on habitats, connectivity, and agricultural land and then work with developers to modify layouts to be less impactful.

Strategy 5: Prioritize protection of corridors through agricultural land.

Local municipalities, counties, land trusts and the SC Department of Agriculture should prioritize farmland protection that increases connectivity between habitat cores.

Strategy 6: The Town of Fort Mill will use the habitat cores data to inform its trail and forest planning.

The Town of Fort Mill should consult the habitat cores data for connectivity opportunities as it creates its Trail Master Plan with expanded trails on the Catawba River. Fort Mill recently passed a tree ordinance regulating the removal of trees.



Landsford Canal State Park stretches along the Catawba River and is home to this 1790 log cabin, as well as the well-preserved remains of the historic canal system. The 448 acre park includes walking trails and eagle nesting sites,

Strategy 7: York County should promote the conservation value of cluster subdivisions

York County's cluster ordinance should be rebranded as a conservation subdivision ordinance with education provided about the benefits to developers and the public.

Strategy 8: The City of Rock Hill will use tree canopy assessment data to plan for green infrastructure and to inform its upcoming Urban Forest Management Plan.

The City of Rock Hill received a technical support grant from the SCFC for an urban tree canopy assessment and planning. The city will use these data to prioritize new tree plantings and develop an Urban Forest Management Plan. As the city expands with annexations, it will partner with land trusts to conserve forestland.

Next Steps

The data created for this plan are a foundation upon which to build a detailed local Green Infrastructure Plan. Any municipality or county wishing to pursue a more detailed local plan should contact GIC.

The purpose of this project was to identify and prioritize those green infrastructure assets that most urgently require protection or restoration in the state. The strategies and maps of habitat cores, corridors, assets, risks, and priorities provide a roadmap and shared vision for conservation and restoration efforts of state agencies, counties, cities, and landowners. Moving forward, agencies, planners, and citizens can view and download these priorities, maps, and data through the HUB site GIC has created in partnership with Esri. Additionally, the GIS datasets have been disseminated to all the agencies, municipalities, and organizations involved in this project to use in land use decisions and conservation planning. <https://scqiplan-gicinc.hub.arcgis.com/>



The Catawba Nation Greenway. The Catawba Nation is South Carolina's only federally recognized Indian tribe.

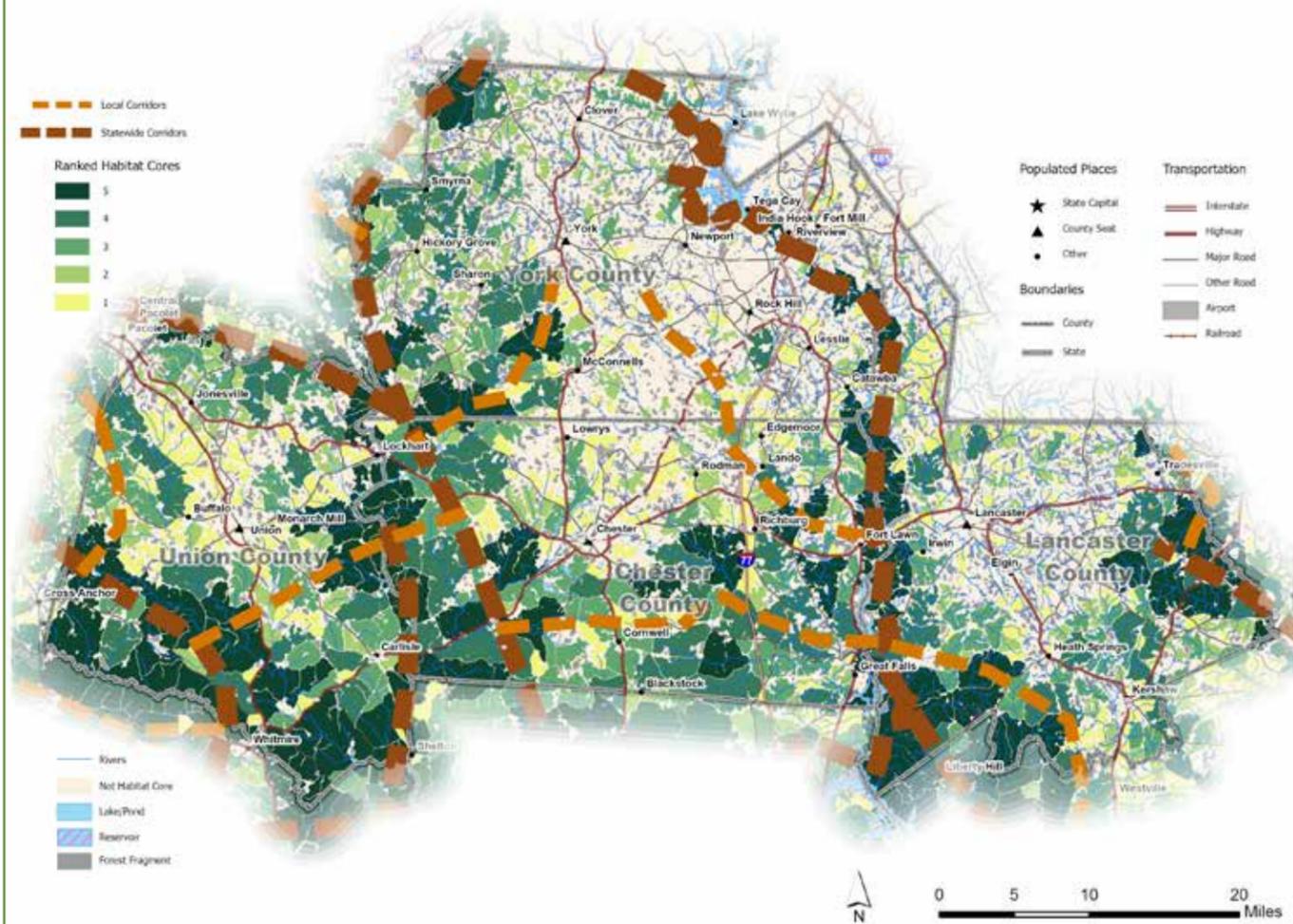


Catawba COG

Maps

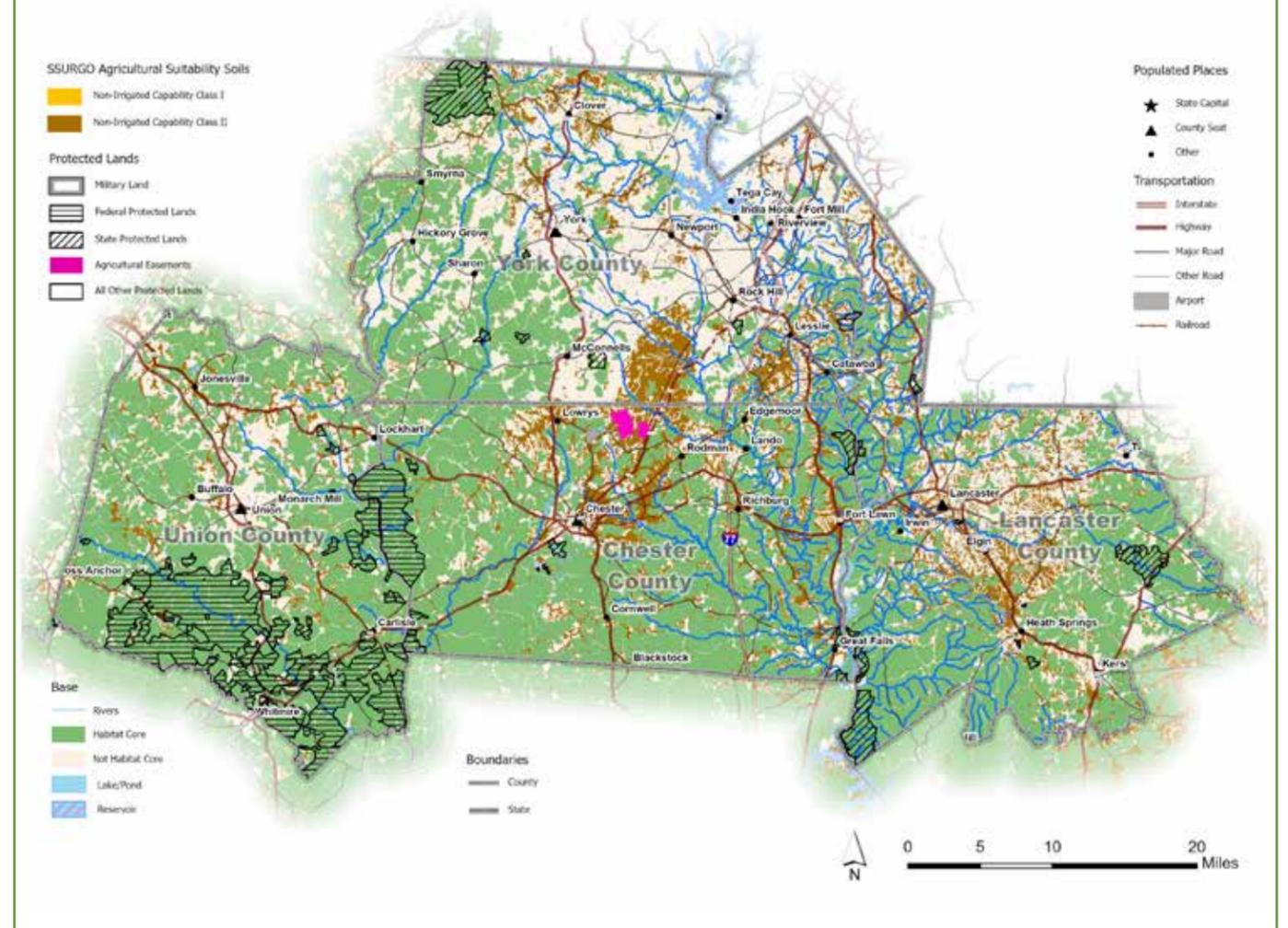
View all these maps on line and download habitat core data at: <https://scgiplan-gicinc.hub.arcgis.com/>

Catawba Strategic Planning Map: Ranked Habitat Cores and Corridors



Habitat cores are intact natural landscapes large enough to support interior forest or marsh dwelling species. This map depicts the region's habitat cores and shows them connected by corridors to form a network. The more connected the landscape, the more resilient it is and the more pathways there are for people, pollinators, and plants. The habitat cores are ranked based on ecological metrics, with dark green representing the highest quality habitat cores and yellow representing the lowest quality habitat cores. A ranking of 5 is the best and 1 is the lowest. Additionally, statewide and regional wildlife corridors are represented on this map by brown dashed lines.

Catawba Assets: Agriculture Map

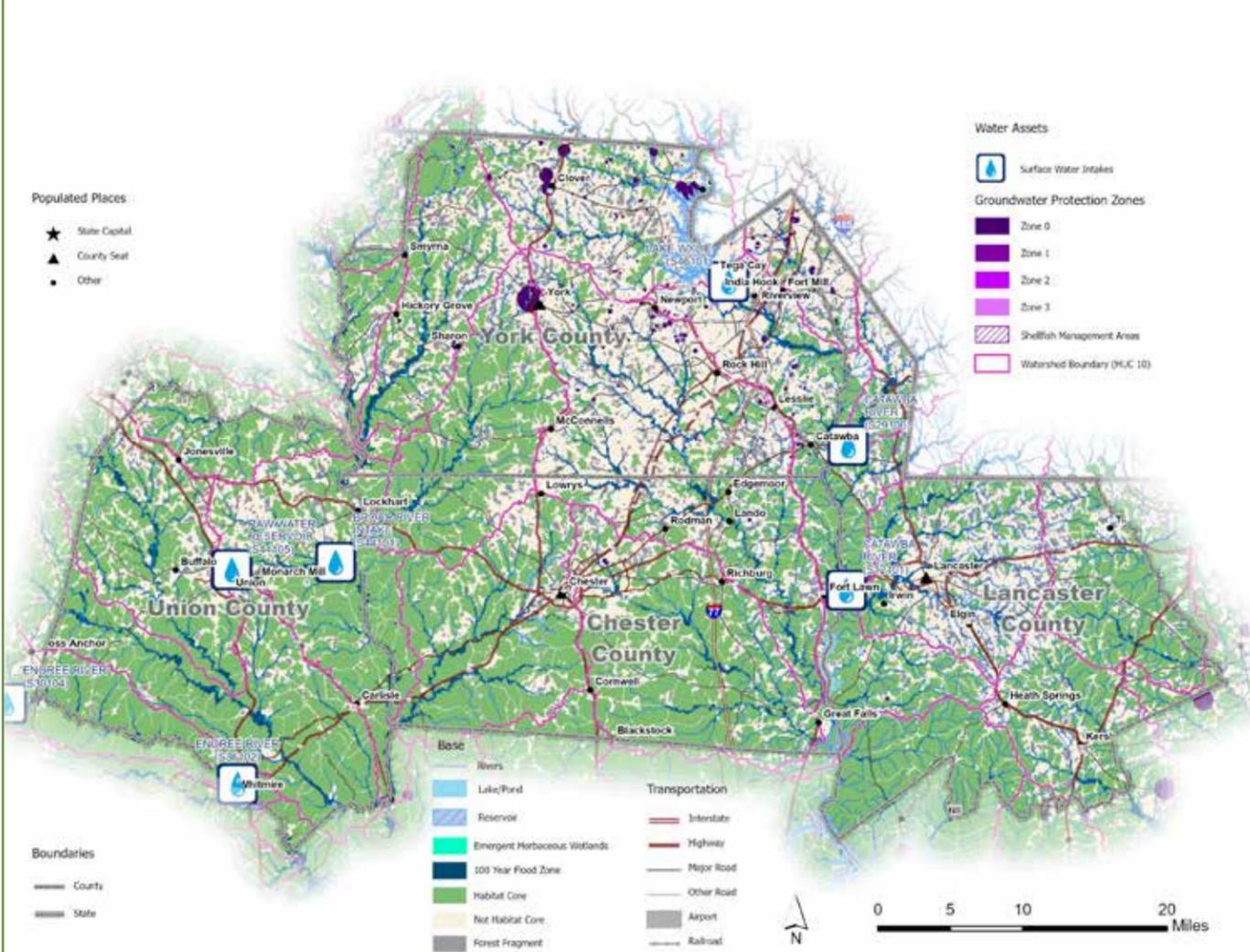


This map identifies the highest quality agriculture soils (classes 1 and 2) on open land, as well as agricultural easements in the region.



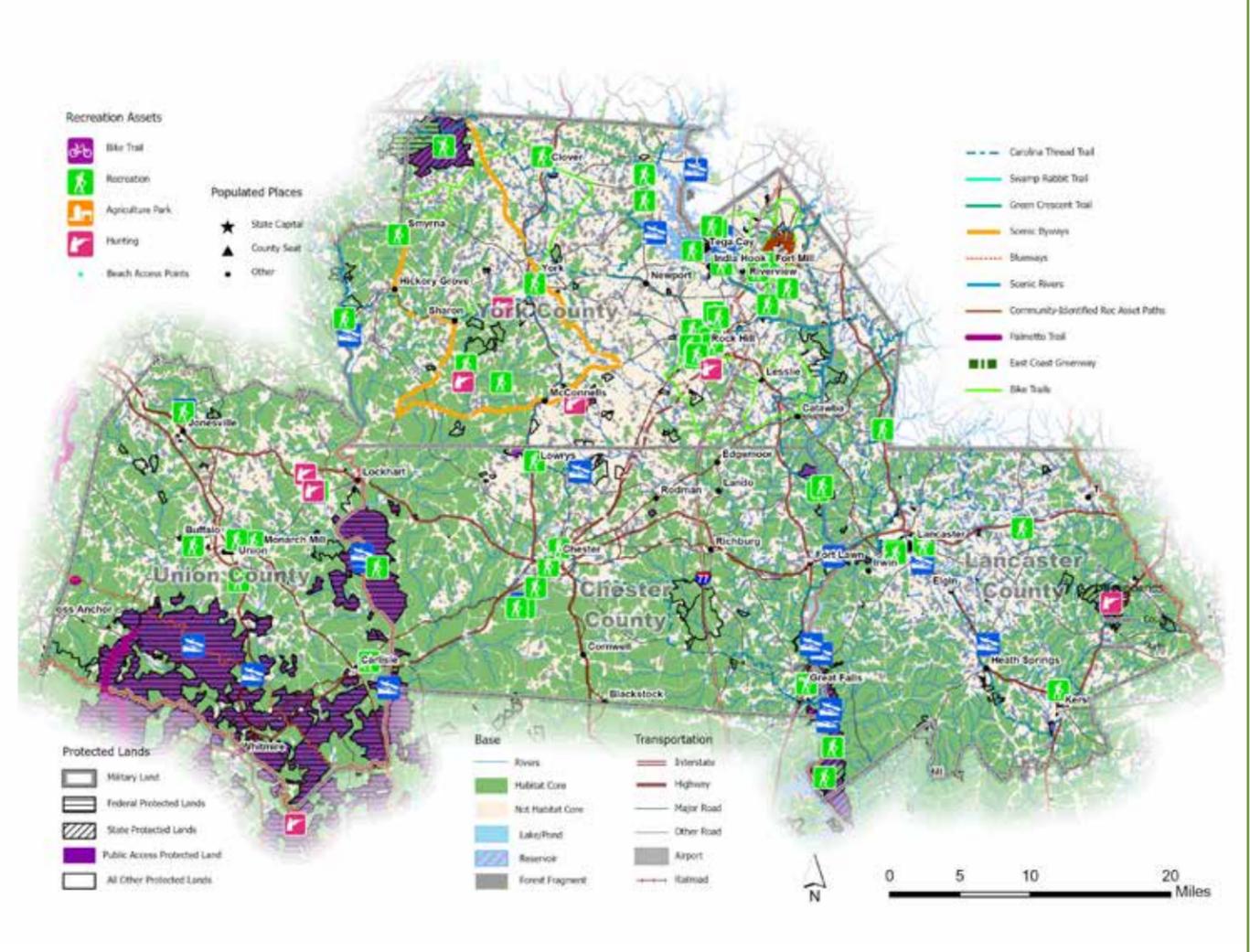
Catawba COG

Catawba Assets: Water Map



This map depicts drinking water reservoirs, surface water intakes, groundwater protection zones, and the 100-year floodplain in the Catawba region. The many forests and wetlands in the region help cleanse runoff to protect surface water quality and provide groundwater recharge.

Catawba Assets: Recreation Map

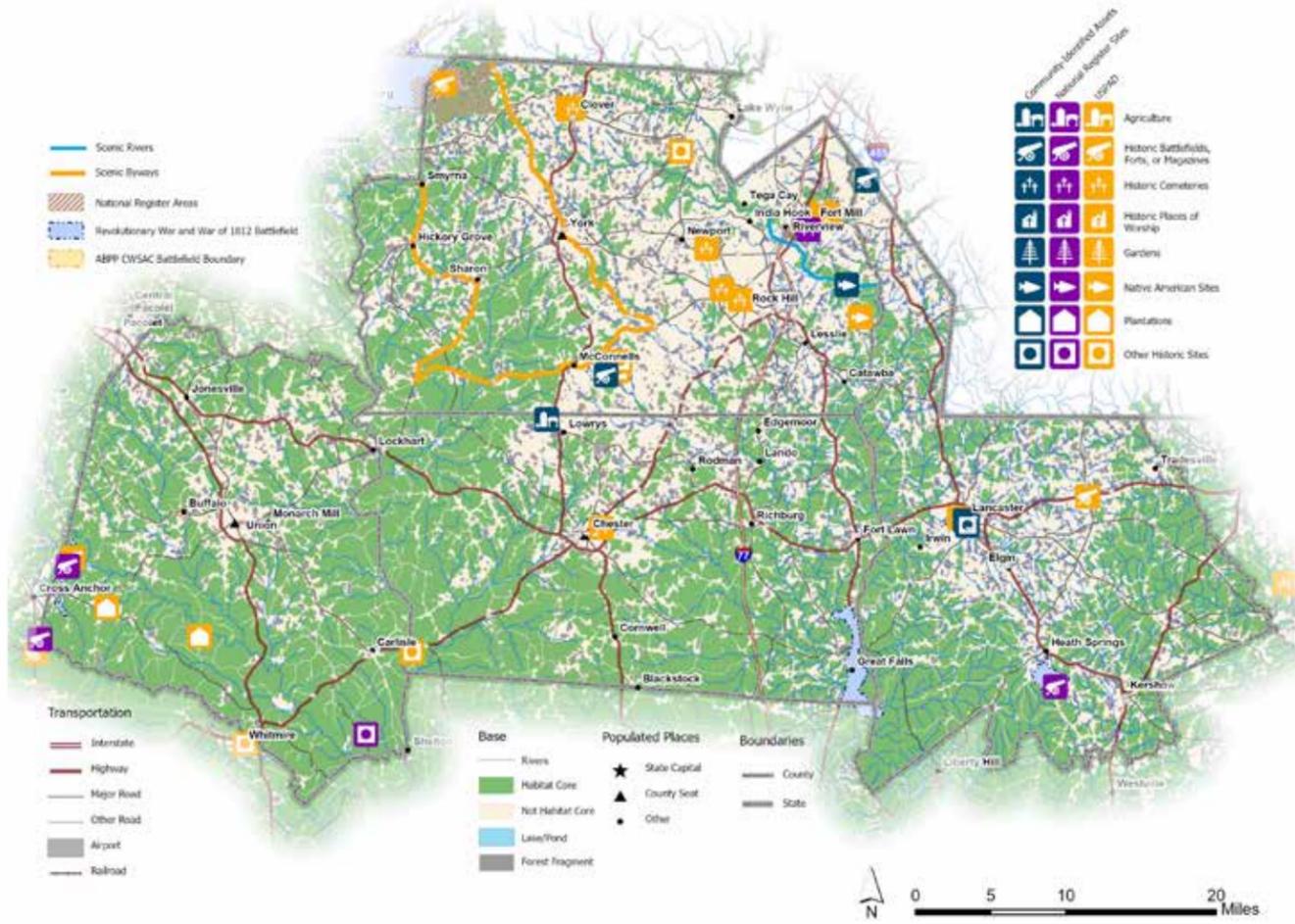


This map depicts boat ramps, blueways, scenic rivers, scenic highways, greenways, Wildlife Management Areas, and federal, state, and local parks over 10 acres in the Catawba region. Many recreational activities depend on a healthy landscape for their enjoyment, such as hiking, birding, boating, fishing, hunting, and other nature-based sports. A healthy landscape provides both access and scenic settings for enjoying the outdoors. Large intact habitats provide refuge, shelter, and food for the many species that residents and tourists appreciate when enjoying the outdoors.



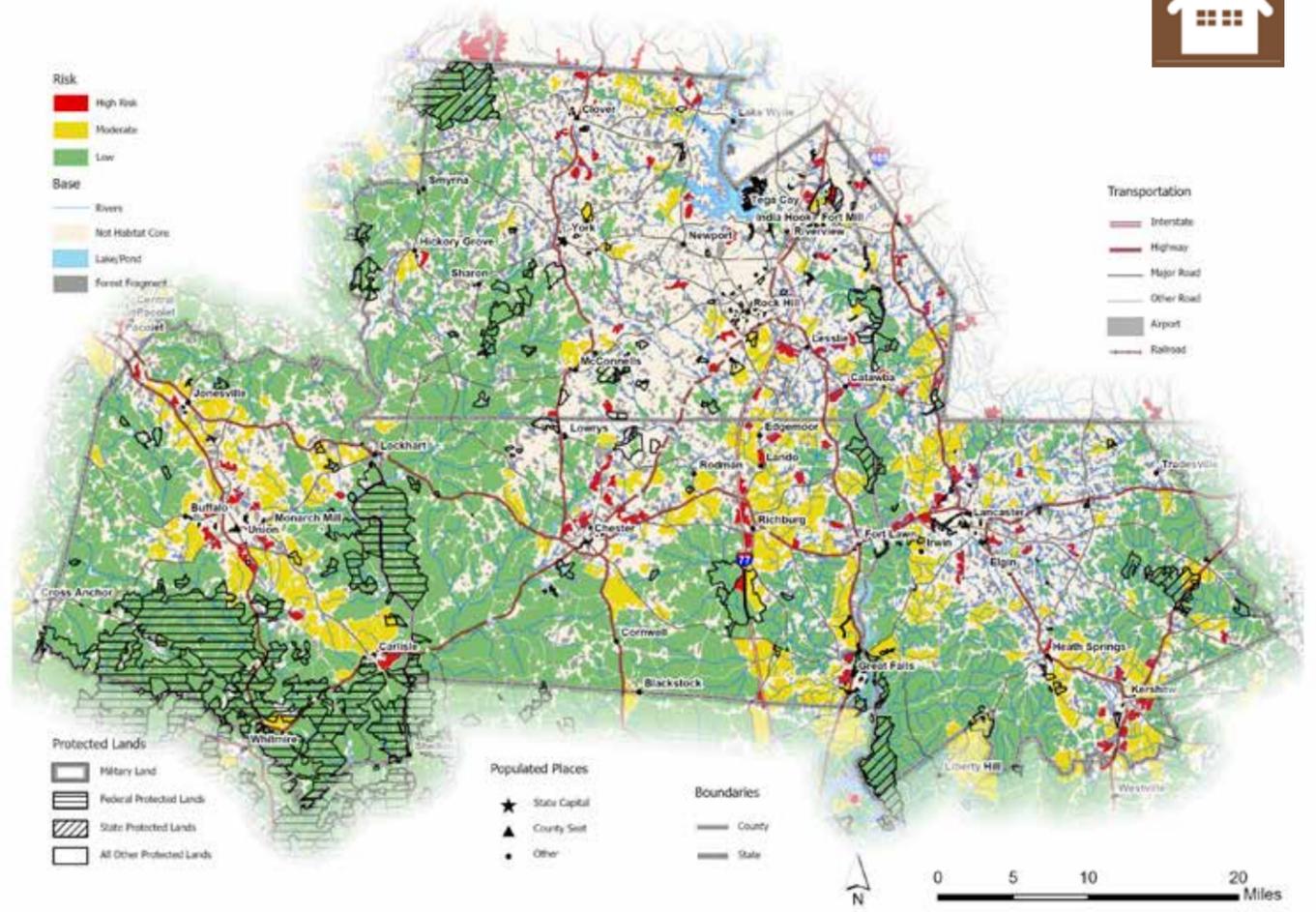
Catawba COG

Catawba Assets: Culture Map



This map displays historic sites, Native Peoples sites, cultural overlay districts, scenic highways, scenic rivers, and waterfalls in the Catawba region. Natural landscapes provide the context, backdrops, and buffers for these sites and contribute to their settings and beauty.

Catawba Risks: Development Risk Map

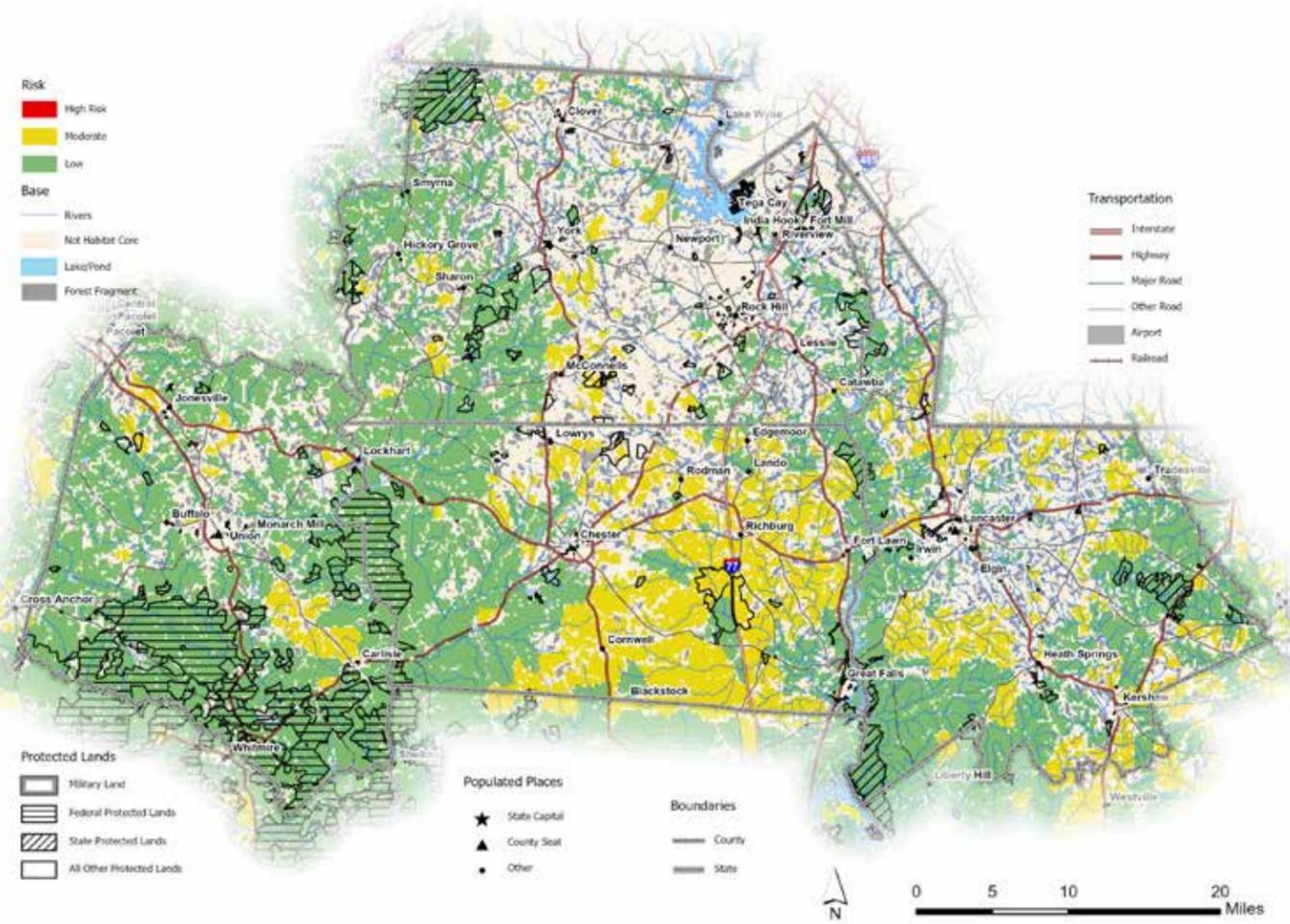


This map depicts the level of development risk based on the SLEUTH Urban Growth Model projected to the year 2060, with protected lands excluded.



Catawba COG

Catawba Risks: Solar Development Risk Map



This map depicts the level of solar development risk based on Argonne Lab's Solar Site Suitability Analysis, with wetlands and protected lands excluded.

Catawba Risks: Water Quality Impairments Map



This map depicts water quality assessment sites and specific impairments across the region, and includes SC DHEC Water Quality Assessment data.

Notes

*Native people of the Catawba region as shown on Native Land Map:

Disclaimer from <https://native-land.ca/>

This map does not represent or intend to represent official or legal boundaries of any Indigenous Nations.

To learn about definitive boundaries, contact the nations in question.

Acknowledgments

Any part of this report may be reproduced, with credit to the Green Infrastructure Center Inc. and the South Carolina Forestry Commission.

Publication Date: March 2023. This guide may be downloaded and printed. All images, graphics and maps in this report are by the Green Infrastructure Center Inc. unless otherwise credited.

Contributing authors to this report include the following Green Infrastructure Center staff: Lauren Doran, Matt Lee, and Karen Firehock; maps are by Stuart Sheppard and Christian Schluter; editing by Tim Lewis.

To obtain any materials presented in this report please contact:

GIC, 320 Valley St., Scottsville VA 24590-4996: Tel: 434-286-3119.

Or visit our website for resources at: <http://www.gicinc.org>

In accordance with Federal Law and U.S. Department of Agriculture (USDA) policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age or disability. To file a complaint of discrimination, write to the USDA Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410; or call 202-720-5964 (voice and TDD). The USDA is an equal opportunity provider and employer.